

### ABSTRACT OF THE DISCLOSURE

A method of decontaminating soil and ground water containing organic contaminants and divalent metal compounds. It comprises the steps of first treating such soils and ground water with an effective amount an aqueous solution containing a peroxide and a water soluble chelating agent for a time sufficient to have the water soluble chelating agent chelate at least one of the divalent metals of the divalent metal compounds present in the soil and ground water. Next, the chelated metals are brought into contact with the peroxide to catalytically convert the peroxide to an oxidizing agent. Finally, the last step is contacting the organic contaminants in the soil and ground water with the oxidizing agent to oxidize the organic contaminants to environmentally safe, non-toxic compounds.